

Patent Application of

**Marvin Byrd**

For

**TITLE: COMPANION RIDER WHEEL CHAIR**

**BACKGROUND & CROSS REFERENCES TO RELATED APPLICATIONS**

This application is entitled to benefit of Provisional Patent Application Serial Number 60/263,496 filed on January 23, 2001.

**BACKGROUND: FEDERALLY SPONSORED RESEARCH**

The invention that is the subject matter of the present application was not a recipient of any federal support for its research and development.

**REFERENCE TO MICROFICHE APPLICATION**

Not applicable

**BACKGROUND: FIELD OF INVENTION**

This invention relates to the field of wheel chair devices that are used by the physically challenged for movement and convenience.

Most prior wheelchairs are custom made to fit a particular individual, with height and width dimensioned to suit the physical configuration of the expected user of the wheelchair. It is also noted that the wheelchairs that have been previously proposed have been relatively heavy and bulky, and do not lend themselves to collapsing to an easy storage configuration. While motorized wheel chair devises do exist, no previous art describes the use of a coupling devise to allow a standard wheelchair to be coupled to a motorized devise.

## **BACKGROUND: DISCUSSION OF PRIOR ART**

Most wheelchairs that are found in the market are custom made to fit a particular person, with specific height and width dimensioned to suit the physical configuration of the future user of the wheelchair. Furthermore, wheelchairs found in the prior art are relatively bulky and heavy and are not easy to store because of their complicated configuration, such as the cooperative escalator and wheel chair of Patent No. 4,326,622 (Ellzey, 1982). With respect to wheelchairs with seats are divided, Patent No. 5,405,187 (Söderlund, 1995) describes a wheelchair where the seat is divided longitudinally. With respect to motorized wheelchair devices, they are present in the prior art, such as the motorized invalid chair transport vehicle claimed in Patent No. D320,579 (Manning et al, 1991), and in the universal electric wheeled chair described in Patent No. 4,941,540 (Bernstein, 1990). Nevertheless, no prior art neither of lighter wheelchairs -such as the universal wheeled chair claimed in Patent 4,825,971 (Bernstein, 1989)- or of motorized wheelchair describe the use of a coupling devise to allow a standard wheelchair to be coupled to a motorized devise.

With respect to devices to hold the two members together when used as companion rider wheelchair, there are locks in the prior art such as the self locking, rattle resistant fork bolt described in Patent No. 6,022,166 (Rogers et al, 2000), but do not claim nor disclose the system used in the present invention.

## **SUMMARY**

This invention constitutes a lightweight wheeled chair forming a companion rider device is formed of hollow tubular frame members. The seat is preferably cantilevered from rear frame members. The frame includes two lower side frame members, each of which has relatively small wheels mounted at both ends. The front of the two lower side members are coupled together using two frame members inter-coupling the two frame members to permit adjustment and collapsing of the wheeled chair. Two upper side members extend forwardly from the rear of the wheeled chair, and are secured to the rear frame members. A seat may be supported directly on these two upper side frame members, or the two upper side frame members may serve as arms for the wheeled chair, with the seat being slung from these arms at a lower position. The present invention is to provide a lightweight wheelchair that can be used as a standalone wheelchair, as well as for a recreational use coupled to a motorized vehicle.

## **OBJECTS & ADVANTAGES**

Advantages of the new wheelchair include the fact that it is very lightweight, with the estimate of its weight being approximately 18 pounds. An additional advantage, of course, is the fact that it may be readily adjusted in height, from kitchen counter-top level

to a much lower desk height level. The unit so that it may easily fit into the back seat or trunk of a car.

Other objects, features and advantages will become apparent from a consideration of the following detailed description and from the accompanying drawings and the claims of the invention.

In view of the foregoing, various objects of the present invention include the following:

1. One object of the present invention is to provide a lightweight wheelchair that can be used as a standalone wheelchair, as well as for a recreational use coupled to a motorized vehicle.
2. Another object of the present invention is to provide a wheelchair in which the width of the wheelchair between the side arms may be readily varied, and wherein the height of the seat of the wheelchair may be easily changed.

## **DESCRIPTION OF THE INVENTION**

In accordance with one aspect of the present invention, a lightweight companion rider wheel chair, a frame having two lower side frame members, with wheels mounted at both ends thereof, and two rear frame members pivotally connected together intermediate there ends to form an "X" configuration, with the lower ends of each of the rear frame members being pivotally secured to the rear ends of the lower side frame members. In addition, two forwardly extending upper side members are provided, with these upper side frame members being mechanically secured to the upper ends of the two rear frame

members. With regard to the arms and seat of the wheeled chair, they may be arranged in one of two alternative ways. As one alternative, the forwardly extending upper side members may be the wheelchair arms, and the seat may be supported by a sling from these arms. As another alternative, two sets of forwardly extending upper frame members may be provided, with the upper pair constituting the arms of the wheeled chair, and the lower pair of forwardly extending frame members constituting the support for the seat. (See Figure 5). As an important feature of the invention, arrangements are provided for changing the spacing of the side members, thereby causing the "X" configuration rear frame members to pivot about their central pivot point and have the arms of the wheelchair come closer or farther apart, and correspondingly raise and lower the height of the seat. (See Figure 4) Further, when the side members are spread apart to their fullest separation, the rear frame members are very nearly parallel and horizontal, for ease in storage.

Other features of the invention may involve one or more of the following:

1. The front ends of the lower side members may be coupled together with a combination of frame members and linear bearings, to maintain alignment of the lower side frame members.
2. In accordance with another aspect of the invention, the rear frame members are the only structural members inter-coupling the seat and the arms with the lower side frame members, so that the seat is cantilevered from the rear to provide a resilient torsion bar-type suspension for comfortable support of the user of the wheeled chair.

3. A T-bar device allows the folding model to be armed and disarmed in a quick and simple manner as part of the folding component of the collapsible model.
4. Advantages of the new wheelchair include the fact that it is very lightweight, with the estimate of its weight being approximately 18 pounds.
5. An additional advantage, of course, is the fact that it may be readily adjusted in height, from kitchen counter-top level to a much lower desk height level. The unit collapses so that it may easily fit into the back seat or trunk of a car.

Other objects, features and advantages will become apparent from a consideration of the following detailed description and from the accompanying drawings

#### **DESCRIPTION OF DRAWINGS**

Having thus described the invention in general terms, reference will now be to the accompanying drawings in which:

FIG. 1 is a photograph side elevation view of a wheelchair illustrating an early embodiment of the present invention;

FIG. 2 is a diagrammatic presentation of wheelchair in Figure 1

FIG. 3 is a composite diagram of the coupling mechanism forming part of the wheelchair:

#1 Tow Bar attachment for tow bar coupling, #2 Tow bar, #3 Coupling mechanism to couple tow bar to motorized vehicle, #4 Coupling for right castor, #5 coupling for left

castor.

FIG. 4 is a composite diagram of the height/weight adjustment mechanism: #6 wheelchair height adjusters (left and right sides) #8 Castor height adjusters (left and right sides)

FIG. 5 is a diagram of seat folding mechanism and armrest couplings: #9 a fragment drawing of the back of the armrest (left and right sides) #10 a fragment drawing of front armrest (left and right sides) #11 drawing coupling for rear armrest (right and left sides) #12 drawing of combination of seat rest, and armrest couplings (left and right sides) #13 Rear seat rest couplings (right and left sides) #14 top of T- Bar / X- Bar for seat (left and right sides) #15 Upper wheelchair frame connection. #16 U-clamp, to clamp the T-Bar / X- Bar to the upper side frame of wheelchair. #17 arm to connect X – Frame to upper chair frame. #18 U-clamp to connect the lower wheelchair frame to the bottom of the T-Bar/W-Bar. #19 Bottom of T-Bar connection. #20 Lower wheelchair frame, connects to the bottom of the T-Bar. #21 Seat sling / X Frame, in open position.

FIG. 6 is a photograph of the invention reduced to practice.

## **OPERATION OF INVENTION**

The invention is operated by coupling the wheelchair device to a motorized vehicle such as an electric wheelchair or golf cart by means of the pin-coupling device. The rider then can be pulled along for recreational purposes by the motorized vehicle.

## **DESCRIPTION AND OPERATION OF ALTERNATIVE EMBODIMENTS**

The invention can be used as a standalone wheelchair, as a coupled device to a motorized device. The wheelchair invention described here is also available as a collapsible device so it can be stored and carried easily and conveniently, such as in the trunk of a car. The alternative embodiments described here are examples only; the scope of the invention shall be as described within the claims of the invention.

## **CONCLUSION, RAMIFICATION & SCOPE OF INVENTION**

This device offers a unique device for transport and recreation of those persons requiring the use of a wheelchair for movement. It improves the quality of life of the physically challenged and allows for more mobility in the community at large. The scope of the invention described here is for example only. The scope of the invention shall be determined as described within the claims of the invention.

## **LIST OF REFERENCE NUMERALS**

Not applicable.